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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,350	09/13/2005	Yoshiaki Hirose	266983US0XPCT	3014
22850	7590	04/18/2008	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			MILLER, DANIEL H	
			ART UNIT	PAPER NUMBER
			1794	
			NOTIFICATION DATE	DELIVERY MODE
			04/18/2008	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/526,350	<b>Applicant(s)</b> HIROSE ET AL.	
	<b>Examiner</b> DANIEL MILLER	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 5-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 5-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/28/2008 has been entered.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, and 5-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al (US 4,244,934) in view of EP (1211221A1) and further in view of McAllister et al (U.S. 4,837,073).

2. It is noted that applicant, in page 4 of the instant specification, defines a coating layer to include more than a distinct layer. "Forming a coating layer includes forming a so-called coating on a surface of a shaped expanded graphite article, forming the coating on a shaped expanded graphite article and at the same time incorporating

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(impregnating) a part of the coating into the shaped expanded graphite article, and incorporating (impregnating) the coating to a certain depth (including to a core) of the shaped expanded graphite article, all of which are defined as being within the scope of the idea of coating layer.”

3. However, Kondo teaches expanded graphite sheet impregnated with an antioxidant comprising a boric acid ester (abstract), which is considered an organic boron compound in accord with applicant’s claim 6. Regarding claim 3, the concentration of boric acid is 2 to 30% aqueous, which is then added to the graphite at 30% to 50% by weight (see column 7 thru 9), overlapping applicant’s claimed range of Boron.

4. EP (1211221A1) teaches expanded graphite sheet impregnated with a phosphorous pentoxide (a phosphorous compound) and phosphate antioxidant (abstract). Regarding claim 4 the phosphorous pentoxide (a phosphorous compound) and phosphate antioxidants are present at up to 5% and 16% respectively, overlapping applicants range.

5. “It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art.” In re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980).

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a graphite sheet with both boron and phosphorous present in order to achieve an additive effect of increased oxidation protection.

6. Kondo in view of EP (1211221A1) are silent as to graphite containing both a boron and phosphorous element.

7. McAllister teaches that Phosphorous and Boron compounds are known to be used to inhibit oxidation by adsorbing on graphite surfaces and that boron compounds also form glassy residue above 450 degrees C, which further blocks active sites in carbon surfaces (column 2 line 10-20). McAllister teaches treating carbon or graphite surfaces with a specific phosphoric acid solution containing both more than 0.1 mass% phosphorous and 0-2% B<sub>2</sub>O<sub>3</sub> (see claims ref.). Given the teachings of McAllister it would have been obvious to one of ordinary skill in the art at the time of the invention to provide both phosphorous and boron in an oxidation protective coating optimizing the percentage of each constituent within the range taught by either of the three references in order to provide optimal oxidation protection of the expanded graphite article of Kondo.

8. Particular percentages of phosphorous and Boron are further obvious in view of the teachings of all three references including McAllister.

9. Given the teachings of the above cited references it would have been obvious to provide the percentage of each constituent within the range taught by any of the three references in order to provide optimal oxidation protection of a graphite article. The ranges disclosed by at least one of the three references overlap applicant's claimed

ranges and therefore it is prima facie obvious to provide the coating within those taught ranges. No patentable distinction is seen.

10. It is noted that McAlister teaches an oxidation resistant coating wherein the content of boron in the oxidation resistant coating can be greater than the content of phosphorous as required by applicant's claims 22 and 23.

11. Particle size is known to affect the ability of a coating to cover a surface uniformly without leaving uncovered area. Regarding claims 5, 7, 12 and 17 Since, coating thickness and particle size are known in the art to be result effective variables when it comes to optimizing coatings protective properties it would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the particle size and coating thickness to increase oxidation stability, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

12. Regarding the process limitations of claims 10-18, "even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.", (In re Thorpe, 227 USPQ 964,966). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious

different between the claimed product and the prior art product (In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113). The product of Kondo in view of EP 221 further in view of McAllister appears to be substantially similar in composition to applicant's claimed composition. No patentable distinction is seen.

### ***Response to Arguments***

13. Applicant's arguments filed 3/28/2008 have been fully considered but they are not persuasive.

14. It is noted by the examiner that "it is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." In re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a graphite sheet with both boron and phosphorous present in order to achieve an additive effect of increased oxidation protection. Particular percentages of phosphorous and Boron are further obvious in view of the teachings of all three references including McAllister. McAllister teaches that Phosphorous and Boron compounds are known to be used to inhibit oxidation by adsorbing on graphite surfaces and that boron compounds also form glassy residue above 450 degrees C, which further blocks active sites in carbon surfaces (column 2

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line 10-20). McAllister teaches treating carbon or graphite surfaces with a specific phosphoric acid solution containing both more than 0.1 mass% phosphorous and 0-2% B<sub>2</sub>O<sub>3</sub> (see claims ref.).

15. Given the teachings of McAllister it would have been obvious to provide the percentage of each constituent within the range taught by any of the three references in order to provide optimal oxidation protection of a graphite article. The ranges disclosed by at least one of the three references overlap applicant's claimed ranges and therefore it is prima facie obvious to provide the coating within those taught ranges. No patentable distinction is seen.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL MILLER whose telephone number is (571)272-1534. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on (571)272-14011. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Daniel Miller

/KEITH D. HENDRICKS/  
Supervisory Patent Examiner, Art Unit 1794